FACT SHEET FOR NPDES PERMIT
NO. WA-005129-2

PUBLIC UTILITY DISTRICT #1 OF KLICKITAT COUNTY
TOWN OF WISHRAM

SUMMARY

The Public Utility District #1 of Klickitat County – Town of Wishram, is seeking reissuance of its National Pollutant Discharge Elimination System (NPDES) Permit for its Publicly-Owned Treatment Works (POTW). The POTW consists of approximately 4.15 miles of sewers (including interceptors), 1 lift station, and aerated wastewater stabilization ponds treatment plant.

The treatment plant provides secondary-level treatment and chlorine disinfection, and then discharges treated wastewater through a submerged outfall to the Columbia River. The PUD has had an inconsistent record of compliance with the previously issued NPDES permit at the Wishram POTW. The POTW has undergone a recent upgrade which may serve to more reliably provide treatment of wastewater.

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has authorized the State of Washington to administer the NPDES permit program. Chapter 90.48 RCW defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the State is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	Public Utility District #1 of Klickitat County
Facility Name and Address	Town of Wishram Wastewater Treatment Facility 525 Bridgeway Road Wishram, WA 98673
Type of Treatment:	Class I, Aerated Stabilization Pond System
Discharge Location	Columbia River, River Mile: 200.8 Latitude: 45° 39' 20" N Longitude: 120° 58' 06" W
Water Body ID Number	WA-CR-1020

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

History

The Town of Wishram's Publicly-Owned Treatment Works (POTW) began operation in 1979. The facility is located on the west side of the town, which itself is located between the Columbia River and SR 14. The POTW is managed by the Public Utility District #1 of Klickitat County. The facility had major upgrades in 1989 and 2003.

The April 2003 upgrade consisted of the following components:

1. New influent helisieve spiral mechanical screen and diversion box.
2. Replacement of the existing lagoon baffles with new baffles.
3. Installation of positive displacement blowers.
4. Installation of a lagoon aeration system with associated low-pressure air distribution piping system (diffused aeration system). Prior to this, the system operated with floating (surface) aerators.
5. Improvements to the existing chlorine contract tank, including new baffles and a flash mixer.
6. Installation of new chemical metering pumps for the chlorination and dechlorination systems, and a new effluent flow meter in the chlorine tank.
7. Construction of a plant drain lift station.

Collection System Status

The district's collection system (including interceptors) contains approximately 4.15 miles of piping. The system had a total of 165 connections in 2002. The approximate population served in 2002 was 324.

Treatment Processes

Wastewater enters the facility through a 10-inch gravity sewer main, discharging to a diversion box. The wastewater is routed from the diversion box through the influent screen before entering a lift station, outfitted with two above-ground self priming pumps, and is transferred to two aerated lagoons. The influent screen may be bypassed for maintenance, and routed through the original grit trap, prior to being pumped to the lagoons.

Each lagoon is equipped with submerged air diffusers. Also, each lagoon is equipped with a floating partition baffle, thus the system is operated as four partially mixed cells in series. The treated wastewater leaving the lagoons flows through a chlorine contact tank and discharges to the Columbia River through an outfall pipe.

The POTW is classified as a Class I facility due to its primary treatment process and design flow (lagoon facility < 1 MGD).

The principal treatment plant operator must be certified by the State as, at least, a Class I operator.

Discharge Outfall

Secondary treated and disinfected effluent is discharged from the facility via a submerged outfall pipe into the Columbia River at river mile 200.8.

Residual Solids

The treatment facilities remove solids only during the treatment of the wastewater at the headworks (grit), in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at a landfill.

The treatment system does not include an active sludge wasting system. Rather, sludge accumulates in the bottom of the aeration ponds (lagoons). The lagoons were originally provided with an asphalt lining. In 1994 they were provided with a HDPE liner, at which time the sludge in the lagoons was cleaned out.

The proposed permit will require quarterly monitoring of sludge depths in the ponds in order to track the remaining volume of the ponds.

PERMIT STATUS

The previous permit for this facility was issued on June 9, 1998. The previous permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS), pH, Fecal Coliform bacteria, and Total Residual Chlorine.

An application for permit renewal was submitted to the Department on August 1, 2002 and accepted by the Department on August 7, 2002.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

A compliance inspection without sampling was conducted on February 5, 2003, in order to gather information for permit development and issuance.

During the history of the previous permit, the Permittee has not remained in compliance, based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department.

During the period from January 2000 to March of 2003, the Permittee reported 56 violations of permit conditions. These violations are summarized in the following table:

Table 1: Summary of Discharge Limit Violations; January 2000 through March 2003

Parameter	Unit	Sample Frequency	# of Violations
TRC	mg/L	Daily maximum	16
TRC	mg/L	Average monthly	7
TRC	lbs/day	Monthly average	3
TRC	lbs/day	Daily maximum	4
BOD	mg/L	Monthly average	8
BOD	mg/L	Maximum weekly	7
TSS	mg/L	Monthly average	3
TSS	mg/L	Maximum weekly	1
Fecal colonies	colonies/100ml	Maximum weekly	3
Fecal colonies	colonies/100ml	Monthly average	1
pH	Standard units	Daily maximum	3

WASTEWATER CHARACTERIZATION

Influent -- Conventional Pollutant Loadings

Monthly influent characterization data are presented in Table 2, in comparison to design loadings for the pre-upgraded treatment plant. Data reflect influent loadings reported in DMRs submitted from January 2000 to March 2003.

Table 2: Characterization of Influent Loadings

Parameter	Average January 2000 to March 2003	Highest Monthly Loading	Percent of Monthly Design Loading	Maximum Monthly Design Loading [a]
BOD_5, in lbs/day	71	116	71	164
TSS, in lbs/day	55	124	70	178
[a] Maximum design loading for treatment plant prior to upgrade.				

Effluent

The concentration of pollutants and other effluent characteristics in the discharge was reported in discharge monitoring reports.

Table 3: Wastewater Characterization

Effluent Characterization: January 2002 to March 2003			
Parameter	**Unit**	**Average Value**	**Max/Min Value**
Total flow month	million gallons	0.831	1.134 max
Average flow per day	million gallons	0.028	0.038 max
pH minimum	standard units	7.6	6.9 min
pH maximum	standard units	8.5	9.5 max [a]
BOD_5 maximum weekly	mg/L	43	92 max [a]
BOD_5	mg/L	33	69 max [a]
Removal rate BOD_5	percent	89	76 min
BOD_5	lbs/day	11	47 max
BOD_5	lbs/day	8	20 max
TSS	mg/L	60	136 max [a]
TSS	mg/L	47	117 max [a]
Removal rate TSS	percent	78	42 min
TSS	lbs/day	14	33 max

Effluent Characterization: January 2002 to March 2003			
Parameter	**Unit**	**Average Value**	**Max/Min Value**
TSS	lbs/day	10	25 max
TRC avg max. daily	mg/L	0.93 [a]	2.20 max [a]
TRC	mg/L	0.39	1.05 max [a]
TRC	lbs/day	0.44	4.40 [a]
TRC	lbs/day	0.14	0.89 [a]
Fecal coliform	#colonies /100ml [b]	282	4220 max [a]
Fecal coliform	#colonies /100ml [b]	32	420 max [a]
Dissolved Oxygen	mg/L	10.0	6.8 min
Temperature	Celsius	15	24 max
Hardness	mg/L	126	211 max
Alkalinity	mg/L	140	239 max
[a] Permit Violations			
[b] Geometric Mean			

SEPA COMPLIANCE

The Klickitat County PUD determined that no SEPA was required to be completed for the new construction for the upgraded wastewater treatment plant because all construction took place within the existing perimeter of the plant and there was no threat to pollution of State waters.

PROPOSED PERMIT LIMITATIONS

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are

not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for the old and upgraded treatment facility are presented below in Table 4. The design criteria for the old treatment works were developed by consultants for KPUD, but the original documentation for these criteria were not available to the permit writer. The criteria for the upgraded treatment facility are taken from plans and specifications dated February 2000 for the upgraded treatment plant prepared by KPUD's consultant, Gray and Osborne, Inc., and are as follows:

Table 4: Design Standards for Wishram's POTW

Parameter	Design Criteria Old STP	Design Criteria Upgraded STP
Monthly average flow (max. month)	0.097 MGD	0.097 MGD
BOD_5 influent loading	164 lbs/day	210 lbs/day
TSS influent loading	178 lbs/day	210 lbs/day
Design population equivalent	820	835

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by Federal and State regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (Federal) and in Chapter 173-221 WAC (State). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment (AKART) for municipal wastewater.

The following technology-based limits for pH, fecal coliform, BOD_5, and TSS are taken from Chapter 173-221 WAC are:

Technology-Based Limits

Table 5: Tech-Based Limits for Wishram's POTW

Parameter	Limit
BOD_5 (concentration):	Average Monthly Limit is the most stringent of the following: - 45 mg/L, and - may not exceed thirty-five percent (35%) of the average influent concentration; Average Weekly Limit = 65 mg/L
BOD_5 (mass):	Monthly effluent mass loading (lb./day) was calculated as the monthly average design flow (0.097 mgd) x 8.34 x average monthly effluent limit (45 mg/L) = mass limit of 36.4 lb./day. The weekly average effluent mass loading is calculated as 1.5 x monthly loading = 54.6 lb./day.
Fecal Coliform Bacteria:	Monthly Geometric Mean = 200 organisms/100 mL; Weekly Geometric Mean = 400 organisms/100 mL
pH:	Shall be within the range of 6.0 to 9.0 standard units.
Total Residual Chlorine	Average Monthly Limit = 0.5 mg/L; Maximum Daily = 0.75 mg/L.
TSS (concentration):	Average Monthly Limit = 75 mg/L; Average Weekly Limit = 113 mg/L.
TSS (mass):	Monthly effluent mass loading (lb./day) was calculated as the monthly average design flow (0.097 mgd) x 8.34 x average monthly effluent limit (75 mg/L) = mass limit of 61.0 lb./day. The weekly average effluent mass loading is calculated as 1.5 x monthly loading = 91.0 lb./day.

The technology-based effluent limits for TSS are based on past treatment plant performance. The use of performance based limits are established in regulation for waste stabilization lagoons by 40 CFR 133.103(c) and WAC 173-221-050(2)(b) .

The technology-based monthly average limitation for chlorine is derived from standard operating practices. The Water Pollution Control Federation's Chlorination of Wastewater (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/liter chlorine residual is maintained after fifteen minutes of contact time. See also Metcalf and Eddy, Wastewater Engineering, Treatment, Disposal and Reuse, Third Edition, 1991. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/liter chlorine limit on a monthly average basis. According to WAC 173-221-030(11)(b), the corresponding weekly average is 0.75 mg/liter.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a State regulation designed to protect the beneficial uses of the surface waters of the State. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

Numerical Criteria for the Protection of Aquatic Life

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

Numerical Criteria for the Protection of Human Health

The State was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

Narrative Criteria

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

Antidegradation

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when receiving waters are of higher quality than the criteria assigned, the existing water quality shall be protected. More

information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in this permit. The discharges authorized by this permit should not cause a loss of beneficial uses.

Critical Conditions

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

Mixing Zones

The Water Quality Standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving AKART and in accordance with other mixing zone requirements of WAC 173-201A-100.

Mixing Zones and Dilution Factors

The Water Quality Standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving AKART and in accordance with other mixing zone requirements of Chapter 173-201A-100 WAC. The Chapter 173-201A-100 (8)(a) WAC establishes the maximum proportion of the receiving water’s flow that can be utilized for effluent dilution.

The previous permit utilized the maximum length downstream allowed by Chapter 173-201A-100 (7)(a) WAC (300 feet plus depth of diffuser). This permit will keep the same values for both the mixing zone. Chapter 173-201A-100 (7)(a) also allows the mixing zone to extend upstream from the diffuser a maximum of one hundred feet. Although the previous permit made no

allowance for the mixing zone to extend upstream from the diffuser, this permit will provide for an upstream mixing zone as provided by regulation.

Chapter 173-201A-100 WAC authorizes a maximum of 25% of the width of the river for the chronic mixing zone, a dimension which at the Columbia River near Wishram is about 660 feet. Wishram's outfall discharges only 10 feet from the riverbank, therefore a width of 660 feet is not realistic. The mixing zone dimensions are given in the following table:

Table 6: Mixing Zone Dimensions

	Distance Downstream (feet)	**Width (ft) [a]**
Chronic mixing zone	307	66
Acute mixing zone	31	28
	Distance Upstream (feet)	**Width Upstream (ft)**
	100	66
[a] Width established by the RIVPLUM5 mixing zone model.		

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

Dilution Factors

Three methodologies were considered in determining dilution factors for this permit cycle. They were: 1) retaining the existing dilution factors, 2) utilizing the results of the RIVPLUME5 spreadsheet dilution model, and 3) calculating dilution factors using a volume-balance algorithm. The dilution factors established in the previous permit, **357 (acute)** and **725 (chronic)**, were retained in this permit in accordance with WAC 173-201A-100(6), which states that the 'size of the mixing zone shall be minimized' to the extent possible. Although the criteria used to determine these dilution factors cannot be documented, these values are the most conservative of the three methods described in the above paragraphs and do not result in a reasonable potential for pollutants in the discharge to exceed the water quality criteria. The pollutant of concern in Wishram's discharge is Chlorine.

The dilution factors of effluent to receiving water that occur within these zones were modeled at the critical condition utilizing RIVPLUM5, a Department approved mixing zone model. The RIVPLUM5 spreadsheet model for this discharge is presented in Appendix C. The results of the modeling are given in Table 8:

Table 7: RIVPLUM5 Dilution Factors

Parameter	Acute	Chronic
Qa (Ambient Flow)	198 cfs	1980 cfs
Qe (Effluent Flow)	0.163 cfs	0.088 cfs
Aquatic Life-based Dilution Factors	4,233	21,006

In accordance with WAC 173-201A-100(8)(a), dilution factors can also be determined utilizing the following **volume fraction equation:**

$DF = (Q_{amb} + Q_e) \div Q_e$

where:

Q_{amb} is the regulation-defined fraction of the 7Q10 critical season flow; and

Q_e is the regulation-defined effluent flow rate.

The Water Quality Standards restrict the portion of rivers and streams that can be mixed by effluent flows to 25% at the chronic mixing zone boundary and to 2.5% at the acute mixing zone boundary. Given the proximity of Wishram's outfall to the shoreline (10 feet), the maximum width the chronic mixing zone is only 20 feet. However, Rivplum5 outputs a chronic mixing zone width of 66 feet, utilizing the input values for river dimensions at Wishram. Sixty six feet is 2.5 % of the river width at the outfall location and 2.5 % of the maximum allowable flow for the chronic mixing zone (Q_{amb}) is 1,980 cfs. The acute mixing zone utilizes 1/10th of the flow the chronic mixing zone.

The maximum monthly effluent flow rate is 0.057 cfs and the maximum daily effluent flow rate is 0.15 cfs

Therefore, the volume fraction **chronic DF** = (1,980 + 0.057) ÷ 0.057 = **34,738**
and the volume fraction **acute DF** = (198 + 0.15) ÷ 0.15 = **1321**

Table 8: Volumetric Fraction Dilution Factors

Parameter	Acute	Chronic
Qa (Ambient Flow)	198 cfs	1,980 cfs
Qe (Effluent Flow)	0.15 cfs	0.057 cfs
Aquatic Life-based Dilution Factors	1321	34,738

Description of the Receiving Water

The facility discharges to the Columbia River, which is designated as a Class A receiving water in the vicinity of the outfall. There are no nearby point source outfalls or significant nearby non-point sources of pollutants. Characteristic uses include the following:

> water supply (domestic, industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

The Middle Columbia River has two ongoing Total Maximum Daily Load studies for impairments to water quality. This stretch of the river is 303(d) listed for temperature and high total dissolved gas. These studies may be finalized within the next five years, at which time wasteload allocations will be imposed, if required.

Surface Water Quality Criteria

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Table 9: Applicable Water Quality Criteria

Parameter	Criteria
Fecal Coliforms	100 organisms/100 mL maximum geometric mean
Dissolved Oxygen	8 mg/L minimum
Temperature [a]	20 degrees Celsius maximum or incremental increases above background
pH	6.5 to 8.5 standard units
Turbidity	less than 5 NTUs above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

[a] A special condition exists for the Columbia River at the outfall location. When natural conditions exceed 20 °C, no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3°C; nor shall such temperature increases, at any time, exceed 0.3°C due to any single source or 1.1°C due to all such activities combined

Consideration of Surface Water Quality-Based Limits for Numeric Criteria

Pollutant concentrations in the proposed discharge exceed water quality criteria at the Permittee's outfall with technology-based controls which the Department has determined to be AKART. Due to the tremendous amount of dilution available at the outfall mixing zones, the Department has determined that no surface water quality standard of the State's regulations has a reasonable potential to be exceeded by the POTW's discharge of effluent. Therefore, only technology-based effluent limitations will be placed into the purposed permit.

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

Table 10: Receiving Water Data

Parameter	Value used
Critical Flow Rate	79,500 cfs (Dalles USGS gauge #14105700)
Velocity	1.0 ft/sec
Depth	30.0 feet
Width	2,650 feet
Roughness (Manning)	n=0.033
% Slope	0.04
Temperature	20^{o} C (critical season 10yr avg Dalles and Bonneville Forebays) (19.5^{o} C at Umatilla-Ecology data-critical months)
pH (high)	8.1 (USGS ref) 8.2 (Umatilla-Ecology data-critical months)
Dissolved Oxygen	9.0 (USGS ref) 9.9 (Umatilla-Ecology data-critical months)
Total Ammonia-N	0.007 (USGS ref) 0.02 (Umatilla-Ecology data-critical months)
Fecal Coliform	2.5 colonies/100 ml (Umatilla-Ecology data-critical months)
Conductivity	125 umhos/cm (Umatilla-Ecology data-critical months)
Alkalinity	70 mg/L [as $CaCO_3$] (USGS ref)
Turbidity	3.2 NTU (Umatilla-Ecology data-critical months)
Hardness	60 mg/L [as $CaCO_3$] (USGS ref)

BOD_5--This discharge with technology-based limitations results in a small amount of BOD loading relative to the large amount of dilution occurring in the receiving water at critical

conditions. Technology-based limitations will be protective of dissolved oxygen criteria in the receiving water.

Temperature and pH--The range pH reported on the Permittee's Discharge Monitoring Report's was 7.6 to 9.5. Due to the large dilution available, there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, the technology-based effluent limitation for pH was placed in the permit.

Fecal coliform--The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a chronic dilution factor of 725.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in this permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Due to the tremendous amount of dilution available in the Permittee's mixing zone, the Department has determined that no reasonable potential exists to violate surface water quality criteria at the edge of the mixing zone boundary. See Appendix C – Technical Calculations for the Total Residual Chlorine reasonable potential calculation.

The previous permit did not require monitoring ammonia concentrations in the effluent. This permit requires weekly monitoring of ammonia. A reasonable potential calculation for ammonia to exceed surface water quality criteria will be conducted when the next permit is developed.

Whole Effluent Toxicity

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing.

Toxicity caused by unidentified pollutants is not expected in the effluent from this discharge as determined by the screening criteria given in Chapter 173-205 WAC. The Town of Wishram has no significant industries discharging effluent to its POTW. Therefore, no whole effluent toxicity testing is required in this permit. The Department may require effluent toxicity testing in the future if it receives information that toxicity may be present in this effluent.

Human Health

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the State by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the applicant's discharge is unlikely to contain chemicals regulated for human health. The discharge may be re-evaluated for impacts to human health at the next permit reissuance.

Sediment Quality

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

This Permittee has no discharge to ground and therefore no limitations are required based on potential effects to ground water.

COMPARISON OF EFFLUENT LIMITS WITH THE PREVIOUS PERMIT ISSUED JUNE 9, 1998

The proposed permit limits have not changed from the existing (previous) permit limits.

Table 11: Comparison of Effluent Limits with Effluent Limits from Previous Permit Issued in June 1998

Parameter	Existing Permit Limits		Proposed Permit Limits	
	Monthly Average	**Weekly Average**	**Monthly Average**	**Weekly Average**
BOD	45 mg/L 36.4 lbs/day	65 mg/L 54.6 lbs/day	45 mg/L 36.4 lbs/day	65 mg/L 54.6 lbs/day
TSS	75 mg/L 61.0 lbs/day	113 mg/L 91.0 lbs/day	75 mg/L 61.0 lbs/day	113 mg/L 91.0 lbs/day
Fecal Coliform	200/100 mL	400/100 mL	200/100 mL	400/100 mL
pH	6 to 9 standard units		6 to 9 standard units	
Parameter	**Monthly Average**	**Daily Maximum**	**Monthly Average**	**Daily Maximum**
Chlorine	0.50 mg/L	0.75 mg/L	0.50 mg/L	0.75 mg/L

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

The monitoring schedule is detailed in the proposed permit under Special Condition S2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (July 2002) for municipal POTW plants with discharges less than 0.1 MGD.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories.* The wastewater from this facility is analyzed at Wishram's POTW laboratory. This facility is accredited for general chemistry and microbiology.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The provisions of Special Condition S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in Special Condition S4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Special Condition S4. restricts the amount of flow.

The permit requires the submittal of an Infiltration and Inflow study (S4.F), one year prior to the permit's expiration. Guidance on the preparation of this study is given in Appendix D of this Fact Sheet.

OPERATION AND MAINTENANCE (O&M)

This permit contains Special Condition S5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

The permit requires the submission of an updated O&M manual one year after the effective date of the permit.

The permit also requires the maintenance of Reliability Class II (EPA 430-99-74-001) for critical components of the treatment plant. This includes, but is not limited to standby electrical power for the influent pumps for periods of extended power outages. The standby electrical power for this facility is not required to be located on-site, but the backup power source must be furnished to critical components in a timely fashion.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in Special Condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under Chapter 70.95J RCW and Chapter 173-308 WAC. The disposal of other solid waste is under the jurisdiction of the Klickitat County Public Utilities District.

Klickitat County Public Utilities District (KCPUD) is currently out of compliance with Chapter 173-308 WAC (the state biosolids rule) with respect to biosolids produced by the Town of Wishram POTW. KCPUD still needs to submit to the Department a complete biosolids permit

application packet. A complete biosolids permit application packet includes: an *Application for Coverage Under the Statewide General Permit for Biosolids Management*, evidence that SEPA requirements have been met, certification that public notice requirements have been met, and any required land application plans. KCPUD should contact Daniel Thompson at (509)575-2842 to discuss the Wishram biosolids management program.

PRETREATMENT

Wastewater Permit Required

The Wishram POTW, as of the date this fact sheet was written, had no discharges from significant industrial users (SIUs). RCW 90.48 and WAC 173-216-040 require SIUs to obtain a permit prior to discharge of industrial waste to the Permittee's sewerage system. This provision prohibits the POTW from accepting industrial wastewater from any such dischargers without authorization from the Department.

Duty to Enforce Discharge Prohibitions

This provision prohibits the POTW from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer. The first portion of the provision prohibits acceptance of pollutants which cause pass through or interference. The definitions of pass through and interference are in Appendix B of the fact sheet.

The second portion of this provision prohibits the POTW from accepting certain specific types of wastes, namely those which are explosive, flammable, excessively acidic, basic, otherwise corrosive, or obstructive to the system. In addition, wastes with excessive BOD, petroleum based oils, or which result in toxic gases, are prohibited to be discharged. The regulatory basis for these prohibitions is 40 CFR Part 403, with the exception of the pH provisions which are based on WAC 173-216-060.

The third portion of this provision prohibits certain types of discharges unless the POTW receives prior authorization from the Department. The discharges include cooling water in significant volumes, stormwater and other direct inflow sources, and wastewaters significantly affecting system hydraulic loading, which do not require treatment.

Sewer Use Ordinance

The permit (S6.D) requires the submittal of a sewer use ordinance. Guidance on preparing this ordinance exists in the following publication:

> Municipal Strategies for the Regulation of Sewer Use; Manual of Practice No. SM-7; Systems Management Series; 1988; Water Pollution Control Federation

The Department has committed to providing technical and legal assistance to the Permittee in developing an adequate sewer use ordinance.

SPILL PLAN

The Department has determined that the Permittee stores a quantity of chemicals that have the potential to cause water pollution if accidentally released. The Department has the authority to require the Permittee to develop best management plans to prevent this accidental release under section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080.

This permit's Special Condition S.9 requires the Permittee to develop and implement a plan for preventing the accidental release of pollutants to State waters and for minimizing damages if such a spill occurs.

OUTFALL EVALUATION

Special Condition S.8 requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers and to determine if sediment is accumulating in the vicinity of the outfall.

GENERAL CONDITIONS

General Conditions are based directly on State and Federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended State or Federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic

life, and the beneficial uses of waters of the State of Washington. The Department proposes that this permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

Laws and Regulations(http://www.ecy.wa.gov/laws-rules/index.html)

Permit and Wastewater Related Information (http://www.ecy.wa.gov/programs/wq/wastewater/index.html)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Water Pollution Control Federation.

1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

APPENDIX A -- PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on July 25, 2002 in the White Salmon Enterprise and the Goldendale Sentinel to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on July 10, 2003, in White Salmon Enterprise to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Central Regional Office
15 West Yakima Avenue, Suite 200
Yakima, WA 98902

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, 509/457-7105, or by writing to the address listed above.

This permit and fact sheet were written by Jim Leier.

APPENDIX B -- GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of prevention, control, and treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the Federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

CBOD5 – The quantity of oxygen utilized by a mixed population of microorganisms acting on the nutrients in the sample in an aerobic oxidation for five days at a controlled temperature of 20 degrees Celsius, with an inhibitory agent added to prevent the oxidation of nitrogen compounds. The method for determining CBOD5 is given in 40 CFR Part 136.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction

or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in State regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

Pass through -- A discharge which exits the POTW into waters of the-State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;
b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;
2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own

initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the State of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C -- TECHNICAL CALCULATIONS

Spread of a plume from a point source in a river with boundary effects from the shoreline based on the method of Fischer *et al.* (1979) with correction for the effective origin of effluent.

Revised 22-Feb-96

INPUT	Chronic	Acute
1. Effluent Discharge Rate (cfs):	0.057	0.150
2. Receiving Water Characteristics Downstream From Waste Input		
Stream Depth (ft):	30.00	30.00
Stream Velocity (fps):	1.00	1.00
Channel Width (ft):	2650	2650
Stream Slope (ft/ft) or Manning roughness "n":	0.0330	0.0330
0 if slope or 1 if Manning "n" in previous cell:	1	1
3. Discharge Distance From Nearest Shoreline (ft):	10	10
4. Location of Point of Interest to Estimate Dilution		
Distance Downstream to Point of Interest (ft):	307	31
Distance From Nearest Shoreline (ft):	11	11
5. Transverse Mixing Coefficient Constant (usually 0.6):	0.6	0.6
6. Original Fischer Method (enter 0) or *Effective Origin* Modification (enter 1	0	0

OUTPUT		
1. Source Conservative Mass Input Rate		
Concentration of Conservative Substance (%):	100.00	100.00
Source Conservative Mass Input Rate (cfs*%):	5.73	15.00
2. Shear Velocity		
Shear Velocity based on slope (ft/sec):	#N/A	#N/A
Shear Velocity based on Manning "n":		
using Prasuhn equations 8-26 and 8-54 assuming		
hydraulic radius equals depth for wide channel		
Darcy-Weisbach friction factor "f":	0.041	0.041
Shear Velocity from Darcy-Weisbach "f" (ft/sec):	0.071	0.071
Selected Shear Velocity for next step (ft/sec):	0.071	0.071
3. Transverse Mixing Coefficient (ft2/sec):	1.283	1.283
4. Plume Characteristics Accounting for Shoreline Effect (Fischer *et al.* , 1979)		
Co	7.20E-05	1.89E-04
x'	5.61E-05	5.67E-06
y'o	3.77E-03	3.77E-03
y' at point of interest	4.15E-03	4.15E-03
Solution using superposition equation (Fischer eqn 5.9)		
Term for n= -2	0.00E+00	0.00E+00
Term for n= -1	0.00E+00	0.00E+00
Term for n= 0	1.76E+00	1.06E+00
Term for n= 1	0.00E+00	0.00E+00
Term for n= 2	0.00E+00	0.00E+00
Upstream Distance from Outfall to *Effective Origin* of Effluent Source (ft	#N/A	#N/A
Effective Distance Downstream from Effluent to Point of Interest (ft)	307.00	31.00
x' Adjusted for *Effective Origin*	5.61E-05	5.67E-06
C/Co (dimensionless)	6.61E+01	1.25E+02
Concentration at Point of Interest (Fischer Eqn 5.9)	4.76E-03	2.36E-02
Unbounded Plume Width at Point of Interest (ft)	112.283	35.680
Unbounded Plume half-width (ft)	56.142	17.840
Distance from near shore to discharge point (ft)	10.00	10.00
Distance from far shore to discharge point (ft)	2640.00	2640.00
Plume width bounded by shoreline (ft)	66.14	27.84
Approximate Downstream Distance to Complete Mix (ft):	2,172,334	2,172,334
Theoretical Dilution Factor at Complete Mix:	1,388,611.5	530,000.000
Calculated Flux-Average Dilution Factor Across Entire Plume Width:	34,658.5	5568.013
Calculated Dilution Factor at Point of Interest:	21,006	4,233

APPENDIX D -- INFILTRATION AND INFLOW GUIDANCE

INFILTRATION-INFLOW (I/I) REPORT GUIDELINES

Special condition S4.D. of your National Pollutant Discharge Elimination System (NPDES) permit requires the annual submission of an I/I report. This report is required in order that the municipality control I/I in their sewage system to prevent:

1. Hydraulic overloading of the treatment plant;
2. Hydraulic overloading of the collection system resulting in over-flows and/or bypasses of sewage; and
3. Dilute sewage that inhibits treatment system effectiveness or its ability to meet secondary effluent standards.

In order to comply with this requirement, the municipality shall submit, each year, a report (see attached format) which includes:

1. The average monthly flow and total rainfall for each month for the past year (for lagoons this means influent flows), together with a graph (see example) plotting a comparison of these data.
2. The average and peak design hydraulic capacity for the plant.
3. The design population equivalent for the treatment plant and the population served by the facility, per month, for the past year.
4. The I/I value for each year and the percent of average design capacity each year's I/I represents.
5. The I/I percent increase or reduction for each year subsequent to the base year I/I (year I/I reports were initiated).
6. The additional lengths of sewer lines added to the collection system, per month, for the past year.

NOTE:

The difference between the highest and lowest monthly average flow will be considered the amount of I/I the treatment facility is experiencing. After the base study, if the amount of I/I increases by 15 percent from that found in the base year based on equivalent rainfall, then the report shall additionally give an explanation for the increased I/I and what corrective measures are planned. Any questions about the report should be directed to the appropriate district engineer.

Sewage Treatment Plant
Annual Infiltration/Inflow Report

, 19 to , 19

Plant Design Capacity

Peak Design Flow:
Average Design Flow:
Population Equivalents:

	Average Monthly Flow (MGD)			Total Monthly Rainfall (inches)			Population Served				Additional Sewer Lines Added (ft.)		
	Year			Year			Year				Year		
Month													
Total													
Low Month										Total (feet)			
High Month										Total (miles)			
Yearly Average													

Infiltration/Inflow Summary

Year	I/I	% over Base I/I	% of Aver. Des. Flow

Comments:

APPENDIX E -- RESPONSE TO COMMENTS

The Department received the following comments and questions from the Northwest Environmental Defense Center (NEDC), of Portland, Oregon:

> Please accept these comments from Columbia Riverkeeper (CRK) and the Northwest Environmental Defense Center (NEDC) on the proposed renewal of NPDES permit number WA-005 129-2, for the Town of Wishram's Publicly Owned Treatment Works (hereinafter "WPOTW"). CRK and NEDC represent members that actively and continually use and enjoy the Columbia River. Members from both organizations are seriously concerned about the ecological health of the Columbia, and its continued degradation. Underlying these concerns is the fact that the Columbia River is clearly at a point of crisis, and issuance of renewal NPDES permits that establish less protective limits than previous permits, will only serve to compound the Columbia's problems.
>
> The following comments discuss some of the more significant problems with the draft permit as proposed. Of particular concern is an increase in the size of the mixing zone and excessively high technology based effluent limitations. WPOTW's past history is also of concern. The facility has violated conditions of its existing permit 56 times over the last 3 years, yet nothing has been done to remedy these violations, and it does not appear that DOE has taken any enforcement measures requiring WPOTW to discharge within the limits of their permit. Additionally, pollutant concentrations In WPOTW's effluent exceed water quality criteria, and are contributing to the continued degradation of the Columbia River, impairing recognized existing uses and potentially causing increased harm to aquatic life. CRK and NEDC encourage DOE to redraft the proposed permit to be more protective of the Columbia River, and take measures to ensure that WPOTW operates within the protective limits established by this permit.

I. New Treatment Process

> In April of 2003, WPOTW implemented minor upgrades to its treatment process. The majority of actions initiated by WPOTW involved replacing old components with newer components. The only actual improvements made to the treatment process were installations of a diffused aeration system in the lagoon, positive displacement blowers, and a flash mixer in the chlorine contact chamber. All other improvements merely replaced old equipment or installed new metering equipment, neither of which actually improve the existing treatment process. WPOTW is taking appropriate steps to ensure that the current treatment processes function adequately. However, the facility has done little to improve the overall treatment of waste. Aside from the minor modifications made in April 2003, the last upgrade at WPOTW was in 1989. Advances in waste treatment technology have made improved treatment processes more prevalent and less expensive.

In the Clean Water Act (CWA), Congress explicitly required POT W's to apply the best practicable waste treatment technology and to continue upgrading facilities with more advanced waste treatment techniques, as they become available. 33 U.S.C. § 1281(b). We urge DOE act consistent with congressional intent and recommend that WPOTW implement new treatment processes such as UV disinfection, biofiltration, or cascade aeration prior to discharge. Finally, the changes in treatment process should compel DOE to implement strict monitoring requirements to ensure the process functions within state and federal law, and is protective of existing water quality and designated uses. 33 U.S.C. § 1251 et seq., WAC 173-201A.

In the CWA, Congress set the timetable for achievement of secondary treatment at POTWs for July 1, 1977. 33 U.S.C. § 133 l(b)(1)(B). EPA regulations implementing the CWA establish numeric limits to define treatment equivalent to secondary treatment. Under EPA's definition, to achieve secondary treatment a facility must not exceed a BOD Sub5 or TSS limit of 45mg/l over a 7 day average; and 30 mg/l over a 30 day average. 40 C.F.R. 133.102(a). Although there are a few exemptions to these standards, none apply to WPOTW. As proposed, the draft permit establishes BOD limits at 65 mg/l over a 7 day average and 45 mg/l over a 30 day average. TSS limits are set at 113 mg/l over a 7 day average and 75 mg/I over a 30 day average. Neither the 7 day or 30 day averages for BOD or TSS are within EPA's definition of secondary treatment. WPOTW, therefore, operates a primary treatment system. Continued operation of a primary system over 30 years after Congress required POTWs to achieve secondary treatment is an egregious violation of the CWA. DOE must set permit limits requiring WPOTW to achieve secondary treatment. Failure to set these protective limits is contrary to Congressional intent and not protective of Columbia River water quality. WPOTW is 30 years behind the CWA's regulatory framework, and must immediately implement a more stringent treatment processes to achieve compliance.

Question #1) Does DOE agree that, under EPA's characterization of secondary treatment, WPOTW fails to achieve secondary treatment? If no, on what grounds does DOE believe WPOTW achieves secondary treatment?

Response:

The Department does not agree that WPOTW fails to meet federal requirements for secondary treatment. See the applicable Code of Federal Regulation citations below (pertinent sections underlined) that establish WPOTW's treatment of effluent as achieving the secondary treatment standard:

40 CFR 133.101 *Definitions. (g) Facilities eligible for treatment equivalent to secondary treatment. Treatment works shall be eligible for consideration for effluent limitations described for treatment equivalent to secondary treatment (§ 133.105), if:*

(1) The BOD5 and SS effluent concentrations consistently achievable through proper operation and maintenance (§ 133.101(f)) of the treatment works exceed the minimum level of the effluent quality set forth in §§ 133.102(a) and 133.102(b),

(2) A trickling filter ***or waste stabilization pond*** *is used as the principal process, and*

(3) The treatment works provide significant biological treatment of municipal wastewater.

§ 133.103 *Special considerations.* ***(c) Waste stabilization ponds****. The Regional Administrator, or, if appropriate, State Director subject to EPA approval, is authorized to adjust the minimum levels of effluent quality set forth in § 133.105 (b)(1), (b)(2), and (b)(3) for treatment works subject to this part, to conform to the SS concentrations achievable with waste stabilization ponds, provided that:*

(1) Waste stabilization ponds are the principal process used for secondary treatment; and
(2) operation and maintenance data indicate that the SS values specified in § 133.105 (b)(1), (b)(2), and (b)(3) cannot be achieved. The term "SS concentrations achievable with waste stabilization ponds" means a SS value, determined by the Regional Administrator, or, if appropriate, State Director subject to EPA approval, which is equal to the effluent concentration achieved 90 percent of the time within a State or appropriate contiguous geographical area by waste stabilization ponds that are achieving the levels of effluent quality for BOD5 specified in § 133.105(a)(1). [cf. 43 FR 55279].

§ 133.105 *Treatment equivalent to secondary treatment. This section describes the minimum level of effluent quality attainable by facilities eligible for treatment equivalent to secondary treatment (§ 133.101(g)) in terms of the parameters -- BOD5, SS and pH. All requirements for the specified parameters in paragraphs (a), (b) and (c) of this section shall be achieved except as provided for in § 133.103, or paragraphs (d), (e) or (f) of this section.*

(a) BOD5. (1) The 30-day average shall not exceed 45 mg/l.
(2) The 7-day average shall not exceed 65 mg/l.
(3) The 30-day average percent removal shall not be less than 65 percent.
(b) SS. ***Except where SS values have been adjusted in accordance with § 133.103(c):***
(1) The 30-day average shall not exceed 45 mg/l.
(2) The 7-day average shall not exceed 65 mg/l.
(3) The 30-day average percent removal shall not be less than 65 percent.

Question #2) If DOE agrees WPOTW does not achieve secondary treatment, what justification does the Department offer for enabling the facility to continue operating as a primary treatment facility? Why has DOE refused to set more stringent BOD and TSS permit limits?

Response:

The WPOTW does meet secondary treatment standards. See the response to question one. The Department has set BOD and TSS limits that are applicable to a waste stabilization pond and are allowed by federal and state administrative rule.

Comments from NEDC

A. Connections to the POTW

The fact sheet states that WPOTW has a total of 165 connections and serves an approximate population of 324. Fact Sheet (ES) at 6. The only description of the connectors served by WPOTW is that, as of the date the fact sheet was written, no significant industrial users (SIUs) connect to the system. ES at 23. Should any SUIs attempt to connect to WPOTW as pre-treaters, the proposed permit appropriately requires DOE authorization. Allowing SIUs to discharge waste to a POTW operating under a permit that does not adequately address constituents in the SIUs effluent, creates a loophole for unchecked discharge of pollutants into state waterways. SIUs must not be allowed to ride on the back of publicly owned treatment facilities. This practice is not protective of water quality, and places the burden of managing industrial waste on publicly owned entities.

Question #3) What is the demographic of connectors to WPOTW? Are there any minor industrial users that discharge into WPOTW's collection system? If so, does DOE have any information about the constituents in their discharge?

Response:

The town of Wishram has no minor (or major) industrial dischargers. The discharges to the POTW consist wholly of domestic users and a few small commercial dischargers and these categories of dischargers are not required to have a discharge permit (WAC 173-216-050).

Comments from NEDC

II. Compliance History

WPOTW has consistently and persistently violated permit limitations. Of particular concern is the facilities inability to achieve total residual chlorine (chlorine), BOD, and TSS limitations. As referenced above, permit limitations for BOD and TSS, as proposed, are not consistent with the CWA, making past violations of these excessively high limits even more troubling. Although DOE compiled a detailed list of compliance issues at WPOTW, it failed to explain or characterize reasons for these continuous violations. Additionally, there does not appear to be any indication that DOE issued notices of noncompliance, or took any actions to address WPOTW's violations. Failure to enforce permit limitations turns the NPDES permitting program into a useless bureaucratic device. While we understand that DOE faces real financial and personnel constraints, this does not diminish DOE's responsibility to effectively administer the NPDES permitting program. Washington State, on its own volition, accepted responsibility to administer the state's NPDES program and needs to live up to this responsibility. We urge that in the future DOE take appropriate measures to ensure that WPOTW complies with permit terms and conditions.

Question #4) Has DOE initiated any enforcement actions or processes against WPOTW? If so, when were these processes initiated and what were the results? Has DOE required WPOTW to implement any measures to address these violations?

Response:

In response to permit effluent violations, the Department issued a Notice of Violation (No. DE 95WQ-C165) to the WPOTW on March 7, 1995. The Department then issued an Administrative Order No. DE 95WQ-C205 on June 6, 1995, and an Administrative Order No. DE 95WQ-C205 First Amendment on January 15, 1997. The administrative order stipulated that a scope of work and an engineering report be developed for an upgrade to the treatment plant. These stipulations were successfully complied with and the upgrade to the plant was completed in the spring of 2003.

Question #5) Why has DOE not addressed the causes of WPOTW's permit violations? Does DOE believe these violations will not continue in the future? If so, please explain why BOD, TSS, Fecal Coliform, and Chlorine violations will not continue in the future.

Response:

It is the Department's position that the upgrades to the treatment plant resulting from the Department's enforcement actions (see above) have improved the quality of the WPOTW's

effluent. The addition of the fine bubble diffusers and additional baffling in the lagoons, along with an upgraded chlorination system should reduce permit violations.

Comments from NEDC

III. Permit Limitations

The proposed permit establishes effluent limitations that are not protective of Columbia River water quality and contrary to federal law. The permit, as proposed, also omits limitations for parameters that DMRs clearly demonstrate are of concern. Additionally, renewing a permit with limitations that are less stringent than numeric criteria for secondary treatment, is contrary to the intent of the CWA. See Section I Treatment Process. DOE must stop its practice of issuing wastewater discharge permits that do not achieve federally required secondary treatment standards.

A. Total Suspended Solids

DOE regulations allow outdated wastewater treatment facilities to surpass protective BOD and TSS limitations promulgated by EPA and DOE. See 40 C.F.R. 133.102 & WAC 173-221-040. Creating alternative standards for antiquated treatment facilities that allow permits to contain effluent limits exceeding secondary treatment limitations, is of serious concern. Proposing permit limitations, contrary to DOE regulations, that exceed these alternative limitations is even more troublesome. In the proposed permit, DOE allots WPOTW a TSS average weekly effluent of 113 mg/I. This proposed limitation is contrary to both the established EPA weekly standard of 45 mg/l, and DOE's less protective alternative weekly standards of 65 mg/l. WAC 173-221-050. DOE has no legal or regulatory basis to grant WPOTW a seven day average TSS limit of 113 mg/l. If DOE granted WPOTW a specific request for exemption of alternative effluent limitations, the fact sheet must address WPOTW's reason for the request, and DOE's rationale for allowing the facility to exceed state standards. Absent a sound and well explained rationale for allotting WPOTW an effluent limitation exceeding state standards, DOE must not issue the proposed permit as written.

Question #6) Does DOE recognize that a seven day average TSS limitation is contrary to state administrative rules? What reasons does DOE offer for proposing such a high limit?

Response:

The Department does not recognize that a seven-day average TSS limitation is contrary to state administrative rules. The Department's policy regarding seven day averages for TSS concentration limit is described in the Water Quality Program Permit Writer's Manual. As well,

WAC 173-221-050(2)(a) specifically allows alternative discharge standards for waste stabilization ponds that include a seven-day average TSS concentration.

Question #7) Did WPOTW request an alternative TSS effluent limitation? If yes, what were the reasons behind the request? On what grounds did DOE justify subverting state administrative regulations?

Response:

It is unknown if the WPOTW specifically requested an alternative TSS effluent limitation. The limitation was in place in the previous permit and is retained in this permit. As stated in the response to question six, State of Washington administrative rules specifically allow for alternative TSS effluent limitations.

Comments from NEDC

> EPA regulations explicitly state that all federally promulgated secondary treatment standards shall be achieved. 40 C.F.R. 133.102. While EPA mandates achievement of federal secondary treatment standards, it also enables state administered waste treatment permit programs to adjust the minimum levels of TSS in the effluent. In order for a state agency to authorize less stringent TSS effluent limitations, it must provide information to EPA showing that (1) waste stabilization ponds are the principal process used for treatment, and (2) operation and maintenance data indicate that TSS values cannot be achieved. 40 C.F.R. 133.103(c). Once this information is provided to EPA, the state agency cannot issue less stringent TSS effluent limitations without subsequent approval from EPA. *Id.* The WPOTW renewal permit fact sheet offers no indication that DOE provided EPA the two requisite showings, or received any approval from EPA to authorize TSS effluent limitations exceeding secondary treatment standards. DOE, again, cannot issue the permit as proposed without first obtaining EPA authorization to exceed effluent limitations equivalent to secondary treatment.

Question #8) Did DOE obtain EPA approval to exceed federally mandated secondary treatment standards? If so, what information did DOE provide demonstrating that WPOTW cannot achieve secondary treatment TSS standards?

Response:

The WPOTW NPDES permit does not exceed federally mandated secondary treatment standards. Washington State WAC 173-221-050 specifically allows alternative secondary TSS effluent limits. This WAC was reviewed and accepted by the EPA.

Question #9) If DOE did not obtain EPA approval to exceed secondary treatment standards, with what authority can DOE issue effluent limitations less stringent than federally mandated secondary treatment standards? Please provide a cite to any applicable statutes or regulations.

Response:

See the response to question 8.

Comments from NEDC

B. Chlorine and state narrative criteria

Chlorine is the most widely used disinfecting agent in waste treatment facilities because of its effectiveness in killing target bacteria. Although it is a cheap and effective disinfectant, Chlorine also has detrimental effects which include toxicity to aquatic life at low concentrations, and the potential to oxidize and create even more toxic compounds.

Because chlorine presents serious problems for the environment, its use and dissemination must be as limited as possible. While chlorine is by far the cheapest disinfectant method, it is not the only option. UV disinfection and oxidation are roven effective treatment methods. We encourage DOE to recommend that WPOTW utilize alternative disinfection methods to help eliminate the presence of chlorine in the aquatic environment.

The draft permit establishes effluent limitations for chlorine at .5 mg/l on a monthly average and .75 mg/l on a weekly average. These limitations are roblematic for two reasons. First, the draft permit grants WPOTW an excessively large mixing zone.

Because the discharged effluent only needs to achieve chlorine limitations at the edge of the mixing zone, the area inside the mixing zone will inherently carry levels of chlorine significantly higher than the proposed limitations. These elevated levels of chlorine are detrimental to aquatic life.

Second, granting WPOTW a zone where effluent will potentially cause chronic or acute toxicity is a violation of Washington State's narrative criteria. Washington State regulations explicitly state;

> "toxic substances shall not be introduced above natural background levels in waters of the state which have the potential either singularly or cumulatively to adversely affect characteristics water uses, cause acute or chronic toxicity to the most sensitive biota dependent on these waters, or adversely affect public health. WAC 173-201A-040.

Included in DOE's list of toxic substances is chlorine. Washington State's explicit goal of protecting the "most sensitive biota" is tantamount to saying that any introduction of chlorine causing chronic or acute toxicity to any aquatic or riparian organism, must be prohibited. In order to support and implement narrative criteria, DOE established numeric limits determined to be protective of aquatic life. In freshwater, DOE regulations prohibit chlorine levels from exceeding 19 µg/l over a one hour average, and 11 µg/l over a four day average. WAC 173-2OlA-040(3). In direct contrast to these regulations, WPOTW's proposed permit establishes excessive and destructive levels for chlorine. The permit, as proposed, sets chlorine levels at a monthly average of 500 µg/l and a weekly average of 750 µg/l. The allotment of a mixing zone implies that effluent chlorine levels will be even higher than 500 µg/l and 750 µg/l within the mixing zone. These limitations severely exceed those deemed protective by DOE, are devastating to aquatic organisms, and a direct violation of state narrative water quality criteria. DOE must establish chlorine limitations that are consistent with state water quality criteria and protective of aquatic life. As mentioned above, consistency with state regulations may require DOE to recommend that WPOTW utilize alternative disinfection methods.

Question # 10) What affects does DOE believe WPOTW's total residual chlorine will have resident and anadromous aquatic organisms?

Response:

The Department does not believe that the WPOTW's chlorine discharge will adversely affect anadromous organisms. Any effect to resident organisms is likely to be very small in scope and area. The impact of WPOTW's discharge to the ecological well being of the Lower Columbia River is minimal.

Question # 11) Does DOE agree that total residual chlorine levels of 500 µg/L on a monthly average and 750 µg/l on a weekly average are not consistent with the criteria found in WAC l73-201A-040(3)? If yes, what rationale does DOE offer for establishing non-protective chlorine limitations?

Response:

The chlorine criteria given in WAC 173-201A-040(3) will be met at the edge of the Permittee's acute and chronic mixing zones.

WAC 173-201A-100 implicitly allows for exceedance of water quality criteria within the mixing zone. It is the determination of the Department that the absence of reasonable potential for the Permittee's discharge to exceed the aquatic and human health water quality criteria at the edges of the authorized regulatory mixing zones fulfills the requirements of the state and federal antidegradation policies and the protection of beneficial uses.

Comments from NEDC

C. Temperature

Absent in the proposed permit is any effluent limitation for temperature. The Columbia River is water quality limited for temperature. This temperature pollution has prompted both DOE and Oregon Department of Environmental Quality (DEQ), to defer to EPA on the creation of a Columbia River temperature TMDL. Temperature pollution in the class AA Columbia River is clearly an area of concern for both states and the EPA.

DOE regulations state that in class AA freshwater, temperature shall not exceed 16C.

Department monitoring reports, however, demonstrate that WPOTW's effluent temperature has been measured at temperatures up to 24C, violating the temperature standard for class AA waters.

Question # 12) WPOTW's compliance history shows effluent temperatures violate state standards. How often did these violations occur? During what seasons? Were any measures initiated to resolve the temperature violations? If not, does DOE anticipate future temperature violations?

Response:

The WPOTW has never had its effluent temperature limited in its NPDES permits, and the proposed permit does not contain a temperature limit. The Department does not agree that the WPOTW's effluent has contributed to an exceedance of temperature standards at the authorized chronic mixing zone boundary.

The respondent has factual errors in the temperature paragraph above. As specified in WAC 173-201A-130, the Columbia River is a Class A freshwater body from its mouth to the Grand Coulee Dam at river mile 596.6. The lower Columbia River (from the mouth to river mile309.3), has a special condition where temperature shall not exceed 20ºC.

Question # 13) Why has DOE chosen not to incorporate any effluent limitation for temperature in the proposed permit? Is DOE certain that temperature is not a parameter of concern at this facility? If so, please explain.

Response:

The Department feels it is premature to establish an effluent limit for temperature on the Permittee's discharge. A temperature limit established for the Permittee's discharge may conflict with the waste load allocation developed in the TMDL process. Furthermore, at this time, there exists no AKART treatment for temperature of municipal discharges. To establish a temperature

limit before completion of the TMDL may require the WPOTW to implement an expensive modification of the facility that may ultimately prove unnecessary.

Preliminary findings, given in the Columbia/Snake Rivers Preliminary Draft Temperature TMDL (EPA -- 09/13/2002) suggest that point sources such as the WPOTW have a minor effect on river temperature. To quote the study: "The point sources can cause temperature plumes in the nearfield but they do not result in measurable increases to the cross-sectional average temperature of the main stems. The dams, however do alter the cross-sectional average temperature of the main stems."

Based upon the modeling resources available to the Department, the WPOTW effluent discharge meets State standards for temperature at the authorized chronic mixing zone boundary.

Comments from NEDC

> The EPA recognizes the threat temperature from POTWs poses to our waterways. In response to this threat, EPA regulations specifically require all POTWs to monitor effluent temperature. 40 C.F.R. 122.21(j). The regulatory purpose behind requiring all POTWs to monitor for temperature is clear. Should effluent temperature levels be measured in excess of protective state and federal standards, appropriate actions must be implemented to address this thermal threat. The EPA would not require mandatory sampling for temperature at all POTWs, if the agency did not intend for temperature violations identified at these facilities to be remedied. DOE must address WPOTW's thermal discharges in the proposed permit. WPOTW's DMRs clearly show that past effluent temperatures have greatly exceeded the protective limit of 16C. DOE's abstention from incorporating a temperature limitation in the proposed permit, turns a blind eye to proven temperature degradation. Water quality limited for temperature, the Columbia River can not assimilate additional heat loads. Absence of a temperature limitation is not protective of Columbia River water quality, and will enable WPOTW to continue discharging heat loaded effluent.
>
> If DOE decided to forgo incorporation of a permit temperature limit due to the impending Columbia River temperature TMDL, this is poor practice. Until a waste load allocation for WPOTW is established in finality, it is DOE's responsibility to ensure the Columbia River does not suffer continued and further temperature impairment. This means DOE needs to set temperature limits, that are at the least, protective of current Columbia River water quality.

Question # 14) Has WPOTW been issued a waste load allocations? If so, what is this allocation and why is it not included in the proposed permit? If not, when does DOE anticipate completion of the Columbia River TMDL?

Response:

The WPOTW has not been issued a waste load allocation (for temperature). The TMDL is in process and the Department believes that it would be premature to set single facility waste load allocations for such a minor contributor to the problem. The Department cannot predict the completion date for the Columbia River (temperature) TMDL.

Comments from NEDC

IV. Mixing Zone

The proposed permit improperly allocates WPOTW a mixing zone. Under DOE regulations, a mixing zone is not appropriate unless the discharger applies all known, available, and reasonable methods of treatment (AKART). WAC 173-201A-lOO(2).

AKART "shall represent the most current methodology that can be reasonably required for preventing, controlling, or abating the pollutants associated with a discharge." WAC 173-201A-020. In this case, as noted above, WPOTW utilizes an antiquated treatment facility that does not even achieve EPA's standards for the equivalent of secondary treatment. Progress in waste treatment technology has increased treatment options and decreased implementation prices. There are clearly more current treatment methodologies available for WPOTW, and it is not unreasonable to require a facility whose last major upgrade was in 1989, to utilize more current treatment methods. Absent implementation of AKART, DOE cannot allocate WPOTW a mixing zone.

Question # 15) Does DOE agree that there are more current treatment methodologies available than those used by WPOTW? If, no please explain. If yes, how does DOE justify the allotment of a mixing zone to WPOTW without the utilization of AKART?

Response:

The Department's position is that the WPOTW has currently implementing all reasonable treatment methodologies for a community of its size and economic status and that the WPOTW has met the AKART standard. During the development of the next permit, five years hence, AKART for this facility will be re-evaluated.

Comments from NEDC

> The proposed permit retains the excessively large size of the current mixing zone, and increases this size by extending the zone 100 feet upstream. One inconsistency with the mixing zone proposed for WPOTW is the allocated size of the mixing zone versus the volume of effluent discharged. WPOTW's effluent volume, at its highest level, was only 1.134 million gallons discharged over one month. Over a 30 day period, the highest recorded monthly value averages out to 0.0378 million gallons per day. With this relatively low effluent flow volume, DOE's authorization of a mixing zone 660 feet by 400 feet makes little to no sense. The proposed mixing zone extends downstream to the maximum distance of 300 feet, and uses the maximum 25% of the river width. Authorizing the maximum downstream and width distances, in conjunction with a small effluent flow volume and permit limitations that exceed federal standards, is absolutely unacceptable. There is simply no need for a POTW that services an estimated population of 324, to be allocated the largest mixing zone allowable.

Question # 16) What factors and analysis did DOE apply to determine the appropriate size of the proposed mixing zone?

Response:

The Department utilized administrative rules delineated in WAC 173-201-100 to determine the appropriate size of the mixing zone. The permit stipulates a mixing zone width that is much narrower than what the administrative rule allows. The mixing zone extension, 100 feet upstream from the outfall, was omitted from the previous permit inadvertently.

The width of the Columbia River at Wishram is approximately 2650 feet. Administrative rule allows utilization of up to 25 percent of the width of the river's width for the mixing zone's width, or in this case a width of 663 feet. The previous permit gave a mixing zone width of 250 feet (approximately 38% of the maximum allowed width). The WPOTW outfall in the Columbia River is only 10 feet from the riverbank. Therefore, a mixing zone width of 663 (or 250) feet is not practical for the geometry of a mixing zone, since the shoreline is a boundary that precludes movement of river water (and attendant mixing) in a balanced manner. The proposed permit allows a mixing zone width of 66 feet, or 1/10th of the allowed width. This mixing zone width was adopted from the Department approved mixing zone model Rivplum5 output (see Appendix A – Technical Calculations)

The purposed permit retains the mixing zone length downstream from the outfall given in the previous permit.

Question # 17) Does DOE anticipate that WPOTW will need the entire mixing zone to dilute its effluent in order to meet permit limitations?

Response:

The current surface water quality standards contain restrictions on the maximum physical dimensions of mixing zones, which the permit complies with. The dimensions of the acute and chronic mixing zones in this permit, along with their resulting dilution factors, were determined to be necessary in order to meet water quality standards at the edge of the given zones. River flow is dynamic, both in speed and direction.

Comments from NEDC

A. Extension of mixing upstream has no regulatory basis

DOE's proposed permit extends the mixing zone 100 feet upstream. DOE regulations pertaining to mixing zones explicitly delineate the maximum sizes for mixing zones. For rivers and streams, mixing zones cannot extend downstream more than 300 feet, occupy more than 25% of the river width, or utilize more than 25% of the river flow.

WAC l73-201A-100(7). DOE regulations implementing mixing zones are very specific about the size and acceptable areas of dilution. While downstream, width, and flow are explicitly addressed, not once do the regulations authorize an upstream -area of dilution. Reading the regulations as a whole, explicit authorization and sizes are given for mixing areas downstream, river width, and flow volume. Absence of language authorizing or addressing the size of an upstream mixing zone, portends that regulatory intentions were to prohibit upstream mixing. If upstream mixing was deemed to be a permissible action, explicit authorization and upstream size would be incorporated into Washington's mixing zone regulations, similar to the explicit authorizations and sizes of the three other mixing zone dimensions. Regulatory silence must therefore be read as a prohibition of upstream mixing.

Question # 18) Where does DOE receive authorization or any justification to allocate WPOTW an upstream mixing zone? Please provide cites if applicable.

Response:

The following administrative rule explicitly allows an upstream mixing zone component: WAC 173-201A-100(7)(a)(i).

Question # 19) Does DOE anticipate that discharged effluent will flow 100 feet upstream? If yes, please explain how? If no, how does DOE justify extension of the mixing zone 100 feet upstream?

Response:

Given the dynamic nature of a flowing river, along with potential osmotic movement of substances added to flowing water in a river, it is beyond the scope of present available technology to say for certain that discharged effluent will never flow upstream from the outfall 100 feet. Therefore, the permit will retain the upstream mixing zone component.

Comments from NEDC

C. Extension of the mixing zone upstream constitutes impermissible backsliding

The proposed permit incorporates a condition extending the mixing zone 100 feet upstream. This proposed permit condition is less stringent than the mixing zone conditions in the current permit and is a violation of federal antibackslinding provisions.

33 U.S.C. § 1342(o). Federal regulations prohibit issuance of a permit containing "effluent limitations which are less stringent than the comparable effluent limitations in the previous permit." 33 U.S.C. § 1342(o) (emphasis added). Additionally, EPA regulations implementing the CWA's arttibacksliding provision provide that "effluent limitations, standards or conditions" must be - at least as stringent effluent limitations, standards, or conditions in the previous permit. 40 C.F.R. § 122.44(l)(1). There are three elements to this prohibition: 1) effluent limitations, standards or conditions; must be 2) less stringent (than comparable effluent limitations); 3) in the previous permit. Id.(emphasis added). Extension of the mixing zone upstream increases the area in which WPOTW can dilute effluent and is therefore a less stringent condition than found in the current permit. Allotting WPOTW an upstream mixing zone enables the facility to violate numeric and narrative criteria upstream from the effluent outfall.

Question # 20) Does DOE agree that upstream extension of the mixing zone in the proposed permit is a less stringent permit limitation? If no, why not?

Response:

The Department does not agree that the upstream extension given in the proposed permit has resulted in a less stringent permit. Due to the much narrower width of the mixing zone in the proposed permit versus the expiring permit (66 feet versus 250 feet), its total area is only 35% of the area of the expiring permit, even when incorporating the upstream mixing zone component.

Comments from NEDC

EPA regulations provide an exception to the antibacksliding provisions where "the circumstances, on which the previous permit was based have materially and substantially changed since the time the permit was issued." 40 CFR § 122.44(l)(2)(i)(A) (emphasis added). EPA's exception to the CWA's antibacksliding provision does not apply to this permit. There is no indication that any circumstances on which the previous permit was based have materially and substantially changed. In fact, WPOTW's antiquated treatment process has remained static for a number of years. Extension of the mixing zone in the proposed permit is a violation of federal law, and DOE must limit the mixing zone to its currently occupied area.

V. Whole Effluent Toxicity Testing

The proposed permit, as drafted, does not require WPOTW to conduct whole effluent toxicity (WET) testing. WET testing is an accurate and comprehensive method of gauging the aggregate toxicity of effluent on aquatic organisms. DOE does not require. WPOTW to conduct WET testing because no significant industries pre-treat at WPOTW. FS at 20. This reasoning fails to consider chlorine in the effluent that can cause acute and chronic toxicity to aquatic organisms. Additionally, DOE does not adequately - characterize the demographic discharging to the POTW. Simply stating that no significant industrial users discharge to the POTW, does not account for minor industrial users, small businesses, or individuals who may discharge toxic substances into the sewer system. Absent certainty of constituents in a wastewater treatment facility's influent, WET testing must always be a requirement.

Question # 21) Does DOE have data specifically characterizing influent constituents? If so, what does this data show? If not, how can DOE be certain toxic constituents that may required WET testing are not present?

Response:

The Town of Wishram has no industrial dischargers. This small village has only domestic and a few small commercial dischargers to the POTW. The WPOTW does not meet any of the criteria given in WAC 173-205-040(1) for requiring whole effluent toxicity testing.

The purpose of WET testing is to evaluate: 1) the aggregate toxicity of a discharge with several or more toxic constituents; 2) a discharge with toxics that have no water quality criteria; or 3) a direct or indirect discharge from an industrial facility. WPOTW does not fit any of these categories.

Comments from NEDC

> Department regulations require WPOTW to conduct WET testing. DOE regulations assert that when there is a risk for aquatic toxicity, effluent characterization for acute and chronic toxicity is needed. WAC 173~20b~)40(1)..Risk is determined by the type of facility or constituents present in the effluent. Applicable to this permit, facilities discharging toxics Identified in 40 C.F.R. 122 Appendix D,-which includes total residual chlorine, axe required to conduct WET testing if there are no established water quality criteria for the identified toxic. WAC 173-205-040(1)(b). Although DOE established water quality criteria for total residual chlorine, WPOTW's permit limitations do not meet this established criteria. Because proposed permit limitations enable WPOTW to discharge chlorine in excess of established protective standards, the facility is a risk for aquatic toxicity and must be required to conduct WET testing. Chlorine levels exceeding protective water quality standards requires WPOTW to characterize the effluent for toxicity either during permit application, or during the first year of the permit term. WAC 173-205-050(1). Neither the fact sheet or draft permit communicate any evidence of WET testing conducted during the permit application period. Unless DOE withdraws the proposed permit and requests WET testing during the extended application period, the proposed permit must include a condition of WET testing during the first year of the renewed permit.

Question # 22) Does DOE agree that a primary purpose of WET testing is to prevent the discharge of toxics in toxic amounts? Does DOE agree that WPOTW's proposed total residual chlorine permit limitations exceed state standards established to protect aquatic organisms?

Response:

The Department agrees a primary purpose of WET testing is to prevent the discharge of toxics in toxic amounts. The Department does not agree that the WPOTW proposed discharge will exceed state standards that protect aquatic organisms at the edge of the chronic and acute mixing zones.

Question # 23) On what basis did DOE determine WPOTW's chlorine permit limitations do not create a risk for aquatic toxicity?

Response:

The reasonable potential for this discharge to create a risk for aquatic toxicity at the edge of the chronic or acute mixing zone is minimal, given the tremendous amount of dilution available (see Appendix A – Technical Calculations).

Comments from NEDC

Specifically addressing the danger posed by total residual chlorine, DOE regulations require that facilities adding chlorine as a disinfectant conduct WET testing. WAC 173-205-080(2). These WET tests must be taken immediately before influent enters the chlorinator, unless the facility utilizes a dechlorinization process, in which case WET tests may be conducted after the effluent is dechlorinated. WAC 173-205-080(3). WPOTW utilizes a dechlorinization process and should therefore be required to conduct WET testing after effluent is dechlorinated. These tests will provide valuable insight into any potential toxic effects on aquatic organisms. If WET testing reveals either chronic or acute toxicity, DOE should reopen the permit and require stricter limitations or conditions to deal with these toxic effects.

Conclusion

For the reasons specified within these comments, Columbia Riverkeeper and the Northwest Environmental Defense Center believe that the draft permit for the Wishram Publicly Owned Treatment Works should be withdrawn and a new permit drafted that is protective of Columbia River water quality, and consistent with state and federal laws and regulations. Thank you for your consideration of these comments. If you should have any questions about material contained within these comments, please feel free to contact me at 503-892-1861 or afidis@lclark.edu.

Sincerely,

E. Alexander Fidis

Comments submitted on behalf of:

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END OF COMMENTS